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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 15

Application Number: 09/098,190
Filing Date: June 16, 1998
Appellant(s): SHEATS ET AL.

Calvin B. Ward
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed May 16, 2001.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement that there are no related appeals or interferences is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 3 and 8 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,920,080	JONES	7-1999
5,844,363	GU et al.	12-1998
5,834,893	BULOVIC et al.	11-1998
5,952,778	HASKAL et al.	9-1999

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (5,920,080) in view of Gu et al. (5,844,363).

Jones discloses a display comprising a plurality of light emitting pixels [Fig. 8, 10], each pixel comprising an isolation transistor [Fig. 1, 100] (Column 7, Lines 21-27), a driving circuit (Column 7, Lines 41-42), and an organic light emitting diode [Fig. 1, 300], the driving circuit storing a value that determines the magnitude of the light emitted by that pixel (Column 7, Lines 45-48), the driving circuit placing the OLED in a conducting path between first [Fig. 8, 801] and second [Fig. 8, 802] power terminals, the isolation transistor connecting the driving circuit to a

bit line when the isolation transistor is placed in a conducting state by the application of a logic signal to a word line (Column 7, Lines 39-41), wherein the OLEDs are part of an array of OLEDs, the array comprising: a sheet [Fig. 1, 500] having first and second surfaces, the first and second surfaces being parallel to one another, the sheet being transparent to light of a first wavelength; a first electrode [Fig. 1, 250] comprising a first electrode layer in contact with the first surface, the first electrode layer being transparent to light of the first wavelength; a light emitting layer [Fig. 1, 300] comprising an organic polymer in electrical contact with the first electrode layer; and a plurality of second electrodes [Fig. 1, 200], one such second electrode corresponding to each OLED, each of the second electrodes comprising an isolated conducting area in contact with the light emitting layer, the light emitting layer generating light of the first wavelength in a region adjacent to the second electrode when a potential difference is applied across the first and second electrodes, and wherein the isolation transistors are part of an array of transistors on a substrate that is separate from the array of OLEDs (Column 5, Line 65 - Column 6, Line 37). Jones does not disclose expressly a flexible substrate array of OLEDs.

However, Gu et al. does disclose flexible OLEDs (Column 1, Line 32 - Column 2, Line 15). Jones and Gu et al. are analogous art because they are from the shared field of organic light emitting devices.

Thus it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to utilize Gu's flexible OLEDs as Jones' substrate array of OLEDs, so as to provide use as a light weight display device.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (5,920,080) in view of Bulovic et al. (5,834,893) and Haskal et al. (5,952,778).

Jones does not disclose expressly a flexible substrate array of OLEDs.

However, Bulovic et al. does disclose a flexible substrate array of OLEDs, wherein the OLEDs have sufficient flexure to allow each OLED to be connected to a corresponding one of the driving transistors when the array of OLEDs is pressed against the array of driving transistors (Column 2, Lines 6-21). Furthermore, Haskal et al. discloses a flexible sheet [Fig. 1, 8] comprising a material impermeable to water and oxygen (Column 3, Lines 19-22). Jones, Bulovic et al. and Haskal et al. are analogous art because they are from the shared field of organic light emitting devices.

Thus it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to utilize Haskal's impermeable sheet and Bulovic's flexible OLEDs as Jones' substrate array of OLEDs, so as to provide use as a resilient display device.

(11) Response to Argument

Appellant's arguments filed in the Appeal Brief on May 16, 2001 have been fully considered but they are not persuasive.

A. Rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Gu et al.

The appellant contends Jones fails to teach a display having separate OLED and transistor arrays. The examiner respectfully disagrees. Jones discloses an array of organic light

emitting material [Figure 1, 300; see Column 6, Lines 3-5] separate from a thin film transistor array [Fig. 1, 100; see Column 7, Lines 23-29]. The appellant attempts to support his position by explaining that the display of Jones is constructed by depositing individual pixels on the transistor-containing substrate, wherein the pixels are isolated from each other. However, such a pixel fabrication technique is not opposed to the pending claim language, and still results in an array of transistors separate from an array of OLEDs.

The appellant further contends the rationale put forth by the examiner for combining the references of Jones and Gu is flawed. The examiner respectfully disagrees. Contrary to the appellant's statement (on page 3, last paragraph), the examiner is not suggesting Gu's flexible OLED array is lighter weight than Jones' OLED array. The examiner simply reasons Gu's flexible OLED array would provide use as a light weight display device. This is not to say Jones' own display device would weigh any more or less.

It is the examiner's core contention that Jones discloses all the features found in currently pending claim 3, except the use of flexible OLED materials. Gu goes on to explicitly disclose the utilization and benefits of flexible OLED materials. With the two references being from the shared field of organic light emitting devices, it would have been obvious to an artisan at the time of invention to substitute Jones' OLEDs with Gu's flexible OLED materials. The examiner's motivational rationale for using Gu's flexible OLED array materials as Jones' OLED array is essentially provided by the Gu reference itself (see Column 1, Lines 32-37) which states "OLED's have been constructed from polymers so as to have a highly advantageous flexibility

that enables them to be used for light weight, portable, roll-up displays or to be used for comfortable displays which can be readily attached to windows, windshields or instrument panels that may have curved surfaces."

Additionally, the appellant contends there is no teaching in either reference with respect to how one would bond an OLED array constructed from the display elements of Gu to the transistor substrate of Jones. However, the examiner must respectfully counter again that pending claim 3 does not concern itself with such fabrication specifics.

B. Rejection of Claim 8 under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Bulovic et al. and Haskal et al.

The appellant contends there is no teaching in Bulovic with respect to the degree of flexibility of the substrate. The examiner respectfully disagrees. Bulovic's inverted OLEDs are grown on a potentially flexible substrate (see Column 2, Lines 6-8) and deposited directly on top of an array of driving transistors (see Column 2, Lines 12-15). As such, Bulovic's array of OLEDs have sufficient flexure to allow each OLED to be connected to a corresponding one of the driving transistors when the array of OLEDs is pressed against the array of driving transistors.

Additionally, the appellant complains that one of Bulovic's provided examples of a substrate material (i.e. aluminum foil) is not transparent, while a second example (i.e. polystyrene) is not impermeable to oxygen and water. Not disputing those issues, the examiner

does respectfully but adamantly disagree with the appellant's conclusion that the burden of proof has not been met with respect to the teachings of a flexible substrate having the properties claimed in claim 8. Bulovic explicitly states (see Column 3, Lines 29-30), "The IOLED is grown on a substrate which can be either opaque or transparent, flexible or rigid." Furthermore, the rejection of claim 8 relies on the Haskal reference (not Bulovic) to teach an oxygen/water impermeable substrate material.

The appellant goes on to argue that there is no teaching in Bulovic (or the other references for that matter) with respect to how one would connect an OLED array to a separate array. Although this has been touched upon previously, the examiner will now again state for the record, his opposing yet respectful position: Whether or not Bulovic (or any of the other references) expressly disclose explicit fabrication techniques for connecting OLED arrays to transistor arrays, is considered a moot point. Claim 8 (much like claim 3) does not address any particular fabrication process for manufacturing a display. The provided references and ensuing rejections are drawn to match claim scope only.

The appellant further chides the examiner for neglecting to include the oxygen and moisture permeability of Haskal's polyethylene terephthalate (PET) substrate. Yet PET is the precise material the current invention uses to form the substrate in the specification (see Page 6, Lines 4-5).

Finally, the appellant contends it remains unclear where the cited prior art contains anything suggesting the desirability of a flexible, air- and water-repellent display device. The examiner will once more respectfully disagree. The use of Haskal's PET substrate is desirable on several fronts: From providing a substrate prone to bend rather break in the presence of physical force, to acting as a commonly available and inexpensive manufacturing material (PET is frequently used to manufacture soft drink bottles). The benefits of flexibility, and polyethylene terephthalate in particular, are well established in the art of organic light emitting display devices.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeff Piziali
July 30, 2001

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